

KENWOOD

HF TRANSCEIVERS TS-450S/690S





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The compact TS-450S gives you competition class reception and 100W transmission capabilities on all nine amateur bands, in SSB, CW, AM, FM and FSK modes. The TS-450SAT incorporates an automatic antenna tuner for easy antenna coupling. The TS-690S boasts the same power and full complement of performance and convenience features, but adds the 50MHz band with separate antenna connector and 50W output power. Both models incorporate Kenwood's AIP (Advanced Intercept Point) System that improves the receiver's intermodulation dynamic range to an incredible 108dB. Signal and sound quality on all modes can be further enhanced by adding the optional DSP-100 Digital Signal Processor. All circuits are designed and built for heavy duty cycle use. The "Primary" function helps the beginner avoid errors by deactivating all but the most frequently used controls.

Whether in stationary or mobile use, either of these new Kenwood Transceivers will give you all the functions and refinements you've always wanted.

The New Kenwood Transceivers, For Aspiring DXers.

FEATURES

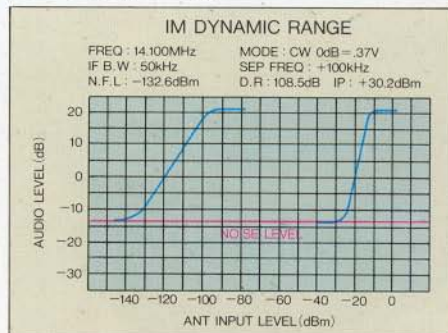
The Receiver

Full Band Coverage with Outstanding Sensitivity

The TS-450S receives from 500kHz through 30MHz. Additionally, the TS-690S provides coverage on the 50MHz band. Special circuit design including "triple conversion" assures superior sensitivity above 24.5MHz. This means you'll get better results DXing and QSOing on the 24 to 28MHz band.

Hear It Clearer with Kenwood's AIP

"Advanced Intercept Point" (AIP) is a Kenwood-exclusive circuit design that gives you greatly improved dynamic range. Instead of just one, there are two selective intercept points, one with large gain for enhanced sensitivity, the other with small gain for better intermodulation characteristics. This results in a greatly reduced noise floor level for clearer reception. Intermodulation dynamic range is no less than 108dB (20-meter band, 100kHz spacing, 500kHz CW bandwidth, AIP on).



Shut Out Interference with Advanced Filter Functions

These transceivers give you a complete array of circuit features to battle interference and improve reception. "IF Shift" moves the IF passband away from interfering signals while keeping the focus on the desired signal for maximum gain and optimum

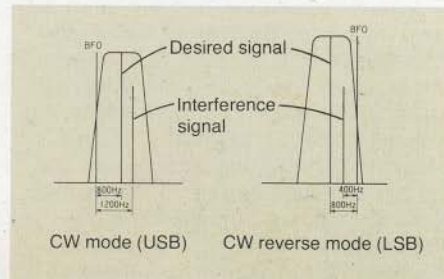
signal-to-noise ratio.

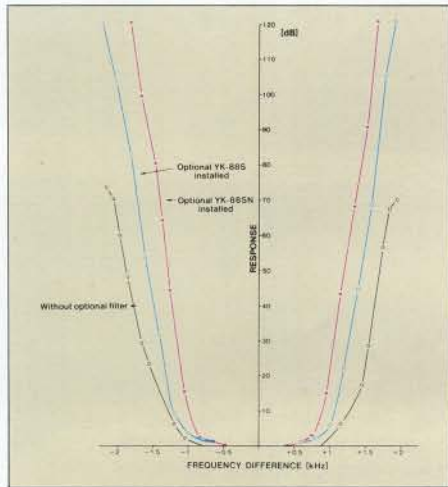
The tuneable "AF Notch Filter" with sharp cutoff characteristics minimizes undesired audio frequencies.

The "Selectable IF Filter" lets you choose the ideal IF bandwidth depending on mode, band and QRM conditions. Additionally, the selected setting can be stored in memory for later recall.

"CW Reverse", reverses the sideband, moving reception away from an interfering signal. In "Reverse" mode, you will find it useful to try tuning in the target signal from above or below. This can reduce interference without the need for retuning. Dedicated CW operators will love the "CW Pitch Control" which permits the CW pitch to be selected in 50Hz steps, from 400 to 800Hz.

"Dual-Mode Noise Blankers", each with its own front panel switch, effectively combat two common types of noise. NB-1 eliminates pulse-type interference such as automobile ignition noise, while NB-2 rejects noise, known as "woodpecker". When extremely strong signals are encountered, clarity will be improved (and IM distortion rejected) by switching the 20dB RF attenuator into the circuit. During no-signal periods, the all-mode squelch circuit suppresses background noise. What's more, AGC response speed can be switched between SLOW and FAST to provide optimum reception in SSB and CW modes under all signal conditions.





The Transmitter

Heavy Duty Cycle Design In A Compact Unit

Although compact size and light, the TS-450S/690S transceivers are designed and built ruggedly for heavy duty cycle use and long-term dependability. Internal cooling fans and reliable heat sinks ensure cool operation for circuit stability.

RF Power Output Control Covers All Modes

Whatever mode of operation you're in the RF Power Output Control lets you vary the output power continuously from approximately 10% to maximum.

Speech Processor

To get through those pile-ups, the audio frequency (AF) type speech processor gives you a higher average "talk power" for improved intelligibility.

Refinements For Better Receiving And Transmitting

Accurate, Convenient Split Frequency Operations with TF-SET

VFO A and VFO B can be set for different frequencies, and the SPLIT key sets the unit to receive on VFO A and transmit on VFO B. Extra convenience is provided by the TF-SET key. It lets you quickly check the transmit frequency without actually transmitting. What's more, the TF-SET key and ΔF key can be programmed so that the difference between the two frequencies is indicated on the numeric display. Naturally, these advanced Kenwood

Transceivers also provide full RIT and XIT functions. RIT lets you shift the receiver frequency in steps of 10Hz, up to ± 1.1 kHz or 20Hz, up to ± 2.2 kHz. By the same token, XIT can shift the transmit frequency by up to ± 1.1 kHz (10Hz step), ± 2.2 kHz (20Hz step). Whatever the conditions, Kenwood's advanced split frequency functions give you the leading edge in accuracy.

Built-In Automatic Antenna Tuner (TS-450SAT)

In its AT version, the TS-450S features a built-in automatic antenna tuner. Via microprocessor control, the tuner automatically establishes the optimum antenna match between 20Ω and 150Ω in the 80 through 10 meter band. Simply turn the AT TUNE key on. When the best match has been found, the AT TUNE light goes out. A beep will alert you to possible antenna defect, if a match cannot be found.

(For the TS-450S and TS-690S, this tuner is optional.)

Ultra-smooth Fine-Tuning For SSB, CW And FSK Modes

Now you can fine-tune in 1Hz steps. One full turn of the main tuning knob corresponds to a VFO frequency change of approximately 1kHz. This feature is made possible by the "Direct Digital Synthesizer" (DDS) which greatly facilitates accurate tuning in SSB, CW and FSK modes and in such advanced uses as HF Packet and AMTOR data communications.

"Primary" Function Facilitates Mobile Use.

The "Primary" function leaves only the most commonly used functions operational while deactivating all less frequently used keys. This makes it a great deal easier for the beginner to avoid mistakes. You'll welcome the "Primary" key in mobile use, too, where normally only standard functions are used.

100 Memory Channels with Multi-Scan Functions

There are 100 memory channels for storing transmit and receive parameters such as frequency, mode, filter setting, AIP on/off. The upper 10 memory channels can also be used to hold the upper and lower limits for the programmable band scan, programmable VFO and store mode and related data. All memory channels

are battery-backed and non-volatile. Without affecting your operating frequency, you can check the memory contents by putting them on the display with the "Memory Scroll" function. If you want to transfer one of the memory frequencies, simply press the corresponding "M \blacktriangleright VFO" key. You also get three different Scan modes.

"Memory Scan" lets you scan any or all 100 memory channels, and you can skip selected channels with the "Programmable Memory Channel Lock-Out" feature.

"Group Scan" divides the 100 channels into 10 groups of 10 each and scans each group.

"Programmable Band Scan" automatically scans from 90 channel through 99 channel within predetermined band limits. In all cases, the scan speed can be continuously adjusted, with the RIT control.

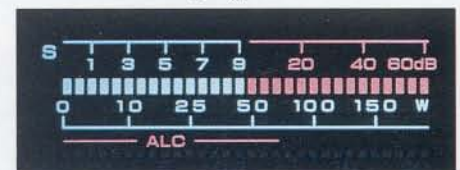
Now You Can Easily Transfer Data Between Two Transceivers.

When you work with two of TS-450S, TS-690S and TS-850S (e.g. for dual receive or master/slave operation), there's no need to input the same data in the other transceiver. Kenwood's "Transfer" function automatically passes the other via a special cable.

Digital Bar Meter, Multi-Function Display

The precision digital bar meter lets you check two parameters at a time; in receive, it works as an S-meter and receiving audio level meter. In transmit, it shows RF power plus either ALC or SWR (Standing Wave Ratio). Additionally a peak hold function can be switched on and off.

The Multi-Function Display indicates a wide variety of settings including frequency, RIT/XIT shift, memory channel, mode, filter selection and function call-outs. Everything you need to know at a single glance.



Check These Other Kenwood Highlights.

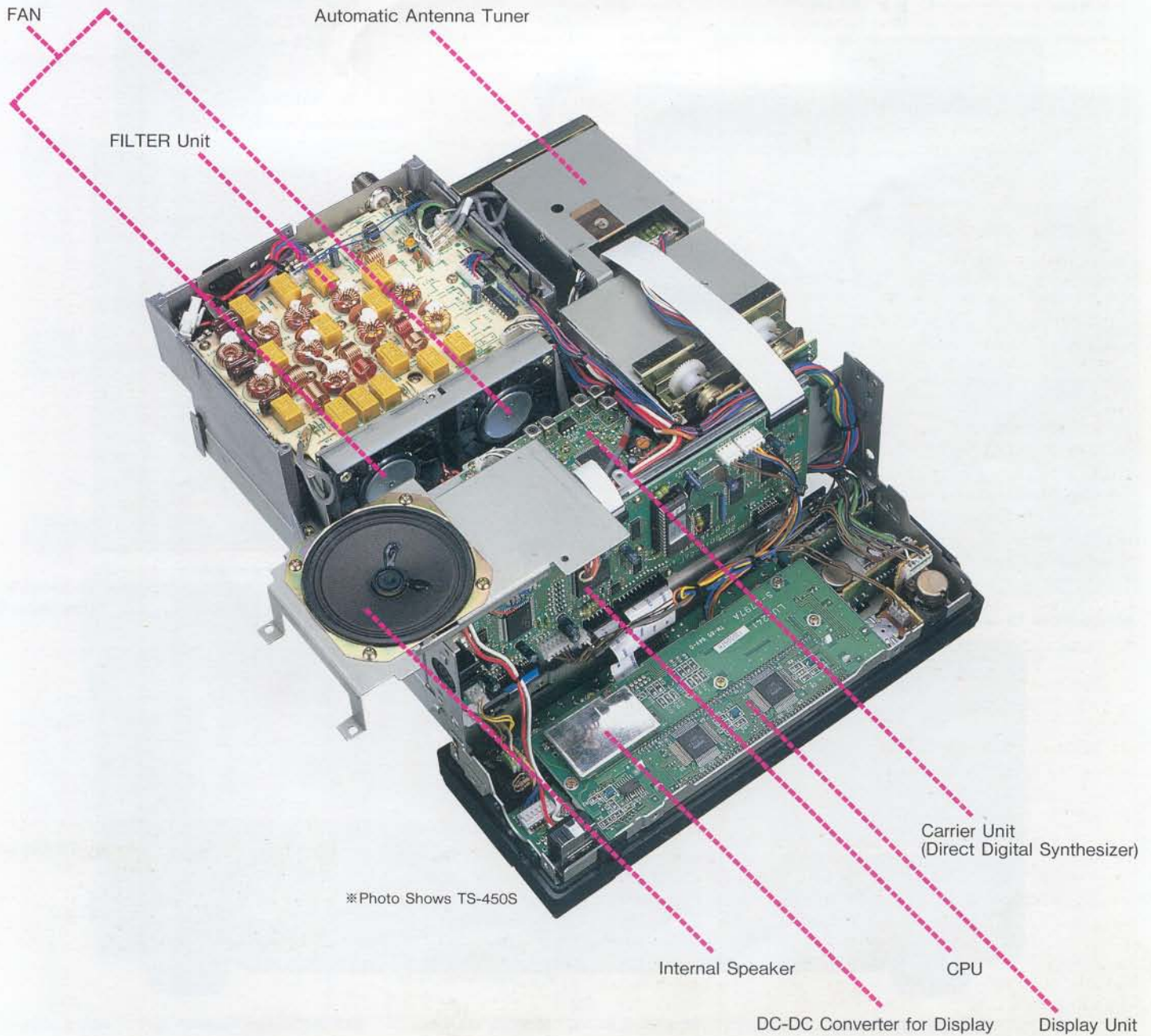
Digital Signal Processor DSP-100(Optional)

Both incoming and outgoing signals can be digitally processed for maximum intelligibility with minimum bandwidth.

Conversion of the signal into a digital waveform (and back to analog) permits the audio passband to be tailored for maximum clarity. In SSB operation, unwanted sidebands can be digitally suppressed, and on CW the rise and decay times of CW waveforms can be changed for optimum clarity.

Direct Frequency Entry

The desired frequency may be entered directly via the numeric keypad.

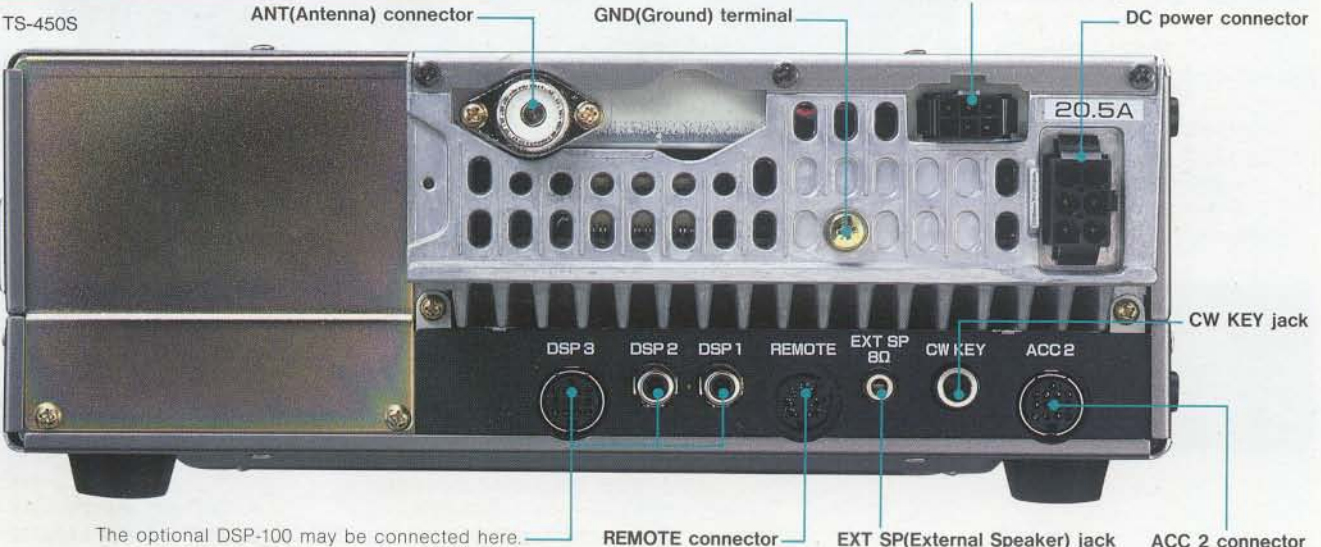




Numeric keypad
 When used in conjunction with the ENT key, the keypad is used to directly enter a frequency. This key functions as a numeric key, and also has the following functions.
8.83 FILTER key
 Selects the desired 8.83MHz filter regardless of mode.
455 FILTER key
 Selects the desired 455kHz filter regardless of mode.
RX M key
 When this key is pressed during reception, the dB display turns on and off. The AF level is displayed on the scale(dB), independent from the AF volume control setting.
AT TUNE key
 When the THRU/AUTO switch is placed in the AUTO position, the automatic tuner will be engaged and the tuner will try to match the antenna.
TX M key
 The meter indication during transmission can be switched as follows.
 ALC → SWR
 No indicator
ΔF key
 Press this key while pressing TF SET key to display the offset from the current receiving frequency.
FINE key
 One turn of the tuning knob is made equivalent to 1kHz(1Hz step) in the SSB, CW, and FSK modes to facilitate tuning.
 When the key is pressed again, the original tuning rate of 10kHz per-revolution returns.
REV key
 The BFO uses USB for normal CW reception. With this key, reception becomes possible on LSB. The BFO uses LSB for normal FSK operation. With this key, reception becomes possible on USB.

FUNCTION keys
TF-SET key
 Depressing this key will allow you to rapidly set or check the transmit frequency, during SPLIT and RIT/XIT operations, without the need of actually transmitting.
A/B key
 This key switches between VFO A or VFO B.
M/V key
 This key switches between the VFO or memory.
SPLIT key
 Press this key for split operation.
RIT key
 Press to turn the RIT ON or OFF.
A=B key
 Equalizes the frequencies, modes and filter selection of VFO A and VFO B.
XIT key
 Press to turn the XIT ON or OFF.
1MHz key
 This key is used to determine if the UP/DOWN switches will function in 1 MHz steps or only thru the amateur bands. When the 1 MHz step position is selected, the 1 MHz indicator will light. When the 1 MHz key has been pressed, the frequency is changed in 1 MHz steps regardless of the amateur band. The frequency step can be changed to 500 kHz. (Function setting when the power is switched on.)
UP/DOWN switch
 Pressing the UP switch increases the frequency, and pressing the DOWN switch decreases it.

*Photo Shows TS-450S



The optional DSP-100 may be connected here.

TS-450S/TS-690S OPTIONAL ACCESSORIES



PS-33
Power Supply(20.5A DC)



PS-53
Heavy Duty Power Supply(22.5A DC)
Designed to match the TS-450S/690S.
Supplies regulated 13.8V DC at 20.5 A with
built-in cooling fan and protection circuits for
maximum reliability.



SP-23
External Speaker
Designed to match the TS-450S/690S.



AT-450
TS-450S/690S Internal Automatic Antenna
Tuner Unit



AT-300
External Automatic Antenna Tuner



TL-992/TL-922A (for U.S.A)
HF Liner Amplifier
The TL-922/TL-922A are class AB₂
grounded-grid linear amplifiers developed by
Kenwood using two high-performance EIMAC
3-500Z power tubes.
They cover all bands 160 m through 10m
(except the three new Amateur bands) for
SSB, CW and RTTY modes of operation. (not
usable with full break-in, semi break-in only)



MC-85 (8 pin)
Deluxe Desk-Top Microphone
With built-in Audio Level Compensation
Unidirectional electret condenser microphone



MC-80 (8 pin)
Desk-Top Microphone
With built-in Pre-Amplifier
Omnidirectional electret condenser
microphone



MC-60A (8 pin)
Deluxe Desk-Top Microphone
With built-in Pre-Amplifier (50k Ω /500 Ω)
Unidirectional dynamic microphone



HS-5
Deluxe Headphones (8 Ω)



HS-6
Small-sized Headphones (12.5 Ω)



IF-232C
Interface Unit



DSP-100
Digital Signal Processor Unit



VS-2
Voice Synthesizer Unit



SO-2
Superior Stability TCXO
(Temperature compensated crystal oscillator)
(Requires modifications)
● Frequency Oscillator: 20MHz
● Frequency Stability: $\pm 5 \times 10^{-7}$ (temperatures)



PC-1A
Phone Patch Controller
(Available only where phone patch operation
is legal)



SW-2100
SWR/POWER Meter (Built-in a coupler)
Selectable Peak-reading/RMS, SWR/POWER
meters for base station use. (30MHz 2kW/
200W)



MB-430
Mobile Mount



PG-2X
DC Cable



TU-8
CTCSS Encoder Unit



YG-455C-1
500Hz CW Filter for 455kHz IF

YG-455CN-1
250Hz CW Narrow Filter for 455kHz IF

YK-88S-1
2.4kHz SSB Filter for 8.83MHz IF

YK-88SN-1
1.8kHz SSB Filter for 8.83MHz IF

YK-88C-1
500Hz CW Filter for 8.83MHz IF

YK-88CN-1
270Hz CW Filter for 8.83MHz IF

YK-455C-1
500Hz CW Filter for 455kHz IF

LF-30A
Low-pass Filter



TS-450S/TS-690S SPECIFICATIONS

GENERAL		RECEIVER	
Transmitter Frequency Range	TS-450S:160, 80, 40, 30, 20, 17, 15, 12, 10 meter Amateur bands TS-690S:160, 80, 40, 30, 20, 17, 15, 12, 10, 6 meter Amateur bands	Circuitry	Triple conversion system
Receiver Frequency Range	TS-450S/690S:500kHz~30MHz TS-690S:50MHz~54MHz	Intermediate Frequency	1st IF 73.05MHz, 2nd IF=8.83MHz, 3rd IF455kHz
Mode	A3J[J3E](USB, LSB), A1[A1A](CW), F1[F1A](FSK), F3[F3E](FM), A3[A3E](AM)	Sensitivity	at 10dB(S+N/N)(0dBμ=1μV)
Frequency Stability	Better than $\pm 10 \times 10^{-6}$		
Antenna Impedance	50Ω		
Power Requirement	13.8VDC \pm 15%		
Power Consumption	Max. transmit 20.5A Receive(no signal)2.1A		
Dimensions	TS-450S:270(10.63)W×96(3.78)H×305(12.01)D mm(inch) TS-690S:270(10.63)W×96(3.78)H×328(12.91)D mm(inch) (Projections not included)		
Weight	TS-450SAT:7.5kg(16.5 lbs) TS-450S:6.3kg(13.9 lbs) TS-690S:6.9kg(15.2 lbs)		
TRANSMITTER			
Final Power Output (Without Antenna Tuner)	TS-450S/690S:1.9MHz~28MHz SSB, CW, FM, FSK=100W, AM=40W TS-690S:50MHz SSB, CW, FM, FSK=50W, AM=20W		
Modulation	SSB=Balanced Modulation FM=Reactance Modulation AM=Low Level Modulation		
FM Maximum Frequency Deviation	Less than ± 5 kHz		
Carrier Suppression	More than 40dB(Modulation Frequency:1.5kHz)		
Spurious Response	TS-450S/690S:1.9MHz~28MHz Less than -50dB(CW) TS-690S:50MHz Less than -60dB(CW)		
Unwanted Sideband Suppression	More than 40dB(Modulation frequency:1.5kHz)		
Microphone Impedance	600Ω		
Frequency Response	400~2600Hz(-6dB)(SSB)		
		Squelch Sensitivity	SSB/CW/FM/AFSK=Less than 20μV (500kHz~1.705MHz) Less than 2μV=TS-450S/690S:1.705MHz~30MHz TS-690S:50MHz~54MHz FM:Less than 0.25μV=TS-450S/690S:28~30MHz TS-690S:50~54MHz
		Image Ratio	TS-450S/690S:More than 70dB(1.8~30MHz) TS-690S:More than 70dB(50~54MHz)
		IF Rejection	TS-450S/690S:More than 70dB(1.8~30MHz) TS-690S:More than 70dB(50~54MHz)
		Selectivity	SSB/CW/FSK=More than 2.2kHz(-6dB) Less than 4.4kHz(-60dB) AM=More than 5kHz(-6dB) Less than 18kHz(-50dB) FM=More than 12kHz(-6dB) Less than 25kHz(-50dB)
		RIT/XIT Variable Range	\pm More than 1.1kHz(10Hz step) \pm More than 2.2kHz(20Hz step)
		Notch Filter Attenuation	More than 20dB
		Audio Output Impedance	8Ω
		Audio Output Power	1.5W(8Ω at 10% distortion)

The equipment meets or exceeds published specifications.
Specifications are subject to change without notice due to advance in technology.

KENWOOD CORPORATION

Shionogi Shibuya Building, 17-5, 2-chome-Shibuya, Shibuya-ku, Tokyo 150, Japan

KENWOOD U.S.A. CORPORATION
COMMUNICATIONS & TEST EQUIPMENT GROUP
P.O. BOX 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745, U.S.A.

KENWOOD ELECTRONICS DEUTSCHLAND GMBH
Rembrücker Str. 15, 6056 Heusenstamm, Germany

KENWOOD ELECTRONICS BENELUX N.V.
Mechelsesteenweg 41B, B-1930 Zaventem, Belgium

TRIO-KENWOOD FRANCE S.A.
13, Boulevard Ney, 75018 Paris, France

TRIO-KENWOOD U.K. LIMITED

Kenwood House, Dwight Road, Watford, Herts WD1 8EB, United Kingdom

KENWOOD ELECTRONICS NEDERLAND B.V.

Amsterdamseweg 35, 1422 AC Uithoorn, Netherland

KENWOOD LINEAR S.p.A.

20125, Milano-Via Arde, 50, Italy

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.

(INCORPORATED IN N.S.W.)

P.O. BOX 504, 8 Figtree Drive, Australia Centre, Homebush, N.S.W. 2140, Australia

KENWOOD & LEE-ELECTRONICS, LTD.

Wang Kee Building, 5th Floor, 34-37, Connaught Road, Central, Hong Kong

KENWOOD ELECTRONICS CANADA INC.

6070 Kestrel Road, Mississauga, Ontario L5T 1S8, Canada